

WHAT IS CLAIMED IS

1. A sheath apparatus for use with an endoscope, the sheath apparatus comprising:
a flexible elongated sheath for surrounding an endoscope, the sheath having a flexible lumen extending within the sheath and adjacent to the endoscope so as to permit the lumen to move in relation to the endoscope and beyond a distal tip of the endoscope, the lumen having a deflectable distal end; and

a controller device coupled to the flexible lumen for controlling deflection of the distal end of the lumen.

2. The apparatus according to claim 1, wherein the controller device is connected to the distal end of the lumen for controlling deflection of the distal end of the lumen.

3. The apparatus according to claim 1, wherein the flexible lumen is configured to allow the delivery of surgical tools to an operating site.

4. The apparatus according to claim 2, wherein said controller device includes a wire member disposed on the flexible lumen, the wire member having a natural deflected state and an elastic memory that returns the wire member to the natural deflected state as the wire member extends beyond the distal tip of the endoscope.

5. The apparatus according to claim 4, wherein said controller device includes a second lumen containing the wire member, the second lumen disposed along the walls of the flexible lumen, whereby the wire member moves in relation to the second lumen.

6. The apparatus according to claim 4, wherein said wire member is formed of one of nitinol and spring steel.

7. The apparatus according to claim 2, wherein said controller device includes a stiffening member disposed along the outside of the lumen and adjacent to the endoscope, and

wherein a distal tip of the lumen has a natural deflected state and an elastic memory that returns the distal tip to the natural deflected state as the lumen extends beyond the stiffening member and the distal tip of the endoscope.

8. The apparatus according to claim 7, wherein said controller device includes a second lumen containing the stiffening member, the second lumen disposed along the walls of the flexible lumen, whereby the stiffening member moves in relation to the second lumen.

9. The apparatus according to claim 7, wherein said stiffening member is a sheath guide disposed along the exterior of the endoscope and adjacent to the lumen, and wherein the lumen includes a guide pin disposed along the exterior of the lumen and adjacent to the endoscope, the sheath guide engaging the guide pin.

10. The apparatus according to claim 2, wherein said controller device includes a flexible elongated member extending from the proximal end to the distal end of the lumen, the flexible elongated member being eccentrically attached to the lumen, where retraction of the elongated member in the proximal direction deflects the distal end of the lumen.

11. The apparatus according to claim 10, wherein said elongated member is a cable.

12. The apparatus according to claim 11, further comprising a plurality of spherical mating members extending within the distal end of the sheath, each of the plurality of spherical mating members including a central passageway, where the distal end of the lumen is encompassed and defined by the central passageway.

13. The apparatus according to claim 1, wherein the sheath is comprised of one of braid, latex, polypropylene, and polyurethane.

14. The apparatus according to claim 1, where one of an exterior surface of the lumen and a corresponding interior surface of the sheath includes a lubricious material for enhancing

movement of the lumen in relation to the sheath.

15. The apparatus according to claim 1, further comprising a plurality of flexible lumens extending within the sheath and adjacent the endoscope.

16. The apparatus according to claim 15, wherein the plurality of flexible lumens includes two flexible lumens positioned on opposite sides of the endoscope.

17. The apparatus according to claim 1, wherein said lumen is comprised of a flexible plastic material.

18. The apparatus according to claim 17, wherein said flexible plastic material is of one of teflon, polypropylene, polytetrafluoroethylene, tetrafluoroethylene, and nylon.

19. An endoscopic device comprising:

an endoscope;

a flexible elongated sheath for surrounding the endoscope, the sheath having a flexible lumen extending within the sheath and adjacent to the endoscope, the lumen extendable beyond a distal tip of the endoscope and having a deflectable distal end; and

a controller device coupled to the flexible lumen for controlling deflection of the distal end of the lumen.

20. A method for using an endoscopic device in an endoscopic procedure, the endoscopic device including an endoscope, a flexible elongated sheath surrounding the endoscope, and a flexible lumen extending within the sheath and adjacent to the endoscope for containing a surgical tool, the method comprising the steps of:

inserting the endoscopic device into a body cavity of a patient;

maneuvering the endoscopic device through the body cavity and proximate to an operation site;

extending a distal end of the lumen beyond a distal tip of the endoscope; and
deflecting the extended distal end of the lumen to maneuver the surgical tool.

21. The method as recited in claim 20, wherein the extending step includes advancing the proximal end of the lumen in the distal direction.

22. The method as recited in claim 20, wherein the endoscopic device includes a wire member having an elastic memory and disposed adjacent to the lumen, and wherein the deflecting step includes extending the wire member beyond the distal tip of the endoscope.

23. The method as recited in claim 20, wherein the lumen has a natural deflected state and an elastic memory at the distal end, and wherein the deflecting step includes extending a stiffening member beyond the distal tip of the endoscope, the stiffening member impeding the distal end of the lumen from retaining the natural deflected state.

24. The method as recited in claim 20, wherein the lumen has an elongated member extending along the lumen and eccentrically attached to a flexible extension disposed on the lumen at a distal end, and wherein the deflecting step includes retracting the elongated member in a proximal direction deflect the flexible extension.

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